

MISSOURI

resources

Fall 2006 • Volume 23 • Number 3



Director's Comment

I'd like to thank Missouri voters for once again supporting the parks-and-soils sales tax. Missouri voters first approved the tax in 1984 and have since renewed it three times, most recently on the Aug. 8 ballot. It is a tremendous responsibility to the future, and we look forward to continuing our efforts to provide Missouri citizens the most outstanding state parks and soil and water resources we can achieve with the funds you have committed to both of those purposes.

This statewide one-tenth-of-one percent sales tax is divided equally between Missouri's system of state parks and state historic sites and our soil and water conservation efforts. Currently three-fourths of the state park system's budget and almost the entire Soil and Water Conservation Program's budget come from the parks-and-soils sales tax.

The support provided by this tax has helped make Missouri's state park system one of the finest in the nation. This system is composed of more than 140,000 acres in 83 state parks and historic sites plus access to 61,000 acres in the Roger Pryor Pioneer Backcountry. In addition to providing a safe, fun place to get fit and offering a variety of affordable family get-aways, Missouri's state parks and state historic sites also stimulate Missouri's economy. A University of Missouri-Columbia study found that in 2002, visitors spent a total of \$410 million on trips to state parks and historic sites. When this amount is spent and respent in the economy, it brings the state park system's overall economic impact in the state to \$538 million. The study also showed that state



park expenditures support 7,660 jobs and generate \$162 million in income.

Money from the soils portion of this sales tax has provided financial incentives and technical assistance for more than 70 watershed projects and has helped thousands of landowners install conservation practices. Sediment is the leading cause of

water pollution in Missouri. While Missouri once ranked number two in the nation for its high rate of soil erosion, we have decreased our erosion rates by half since initial passage of the sales tax, saving more than 148 million tons of soil and protecting Missouri's rivers, lakes and streams. Between fiscal year 1986 and March 2005, landowners received more than \$388 million in assistance.

This tax also includes a sunset clause, which gives the public more opportunity for input on what they feel is important to the state park system and the soil and water program. The clause helps keep the system and program accountable, and also allows for adjustments that may need to be made to ensure the programs are operated efficiently and effectively.

For more information about this tax, visit the department's Web site at [www.dnr.mo.gov/pubs/index.html#psst]. Again, I thank you for helping us protect and preserve Missouri's state parks and our soil and water quality.

Doyle Childers
Missouri Department of Natural Resources

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The mission of the Department of Natural Resources is to protect, preserve and enhance Missouri's natural, cultural and energy resources.

MISSOURI RESOURCES

is published three times per year by the Missouri Department of Natural Resources to inform readers about important natural resource issues and how they are being addressed. Any correspondence should be directed to the editor at the Department of Natural Resources, Publications, P. O. Box 176, Jefferson City, MO 65102-0176, or call 1-800-361-4827. E-mail address: moresdnr@dnr.mo.gov MoDNR home page: www.dnr.mo.gov

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is available in alternative formats.

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Missouri Resources is printed with soy ink on recycled paper at Banta Publications Group, Liberty, Missouri.



printed on recycled paper



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When small towns sit down to plan for commercial and residential growth, their future sewage needs can never be ignored. When one sits 17 miles from a major city and on top of four distinct watersheds, public health hangs on every decision.

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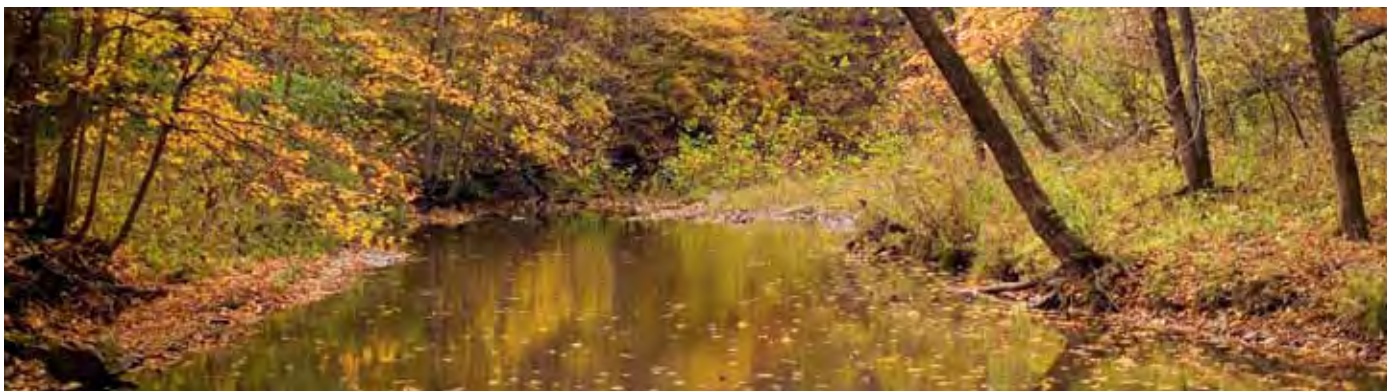
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Above: Gans Creek Wild Area at Rock Bridge Memorial State Park.

COVER: Water flows from the spring at Ha Ha Tonka State Park, submerging a bed of bur-reed (*Sparganium americanum*).

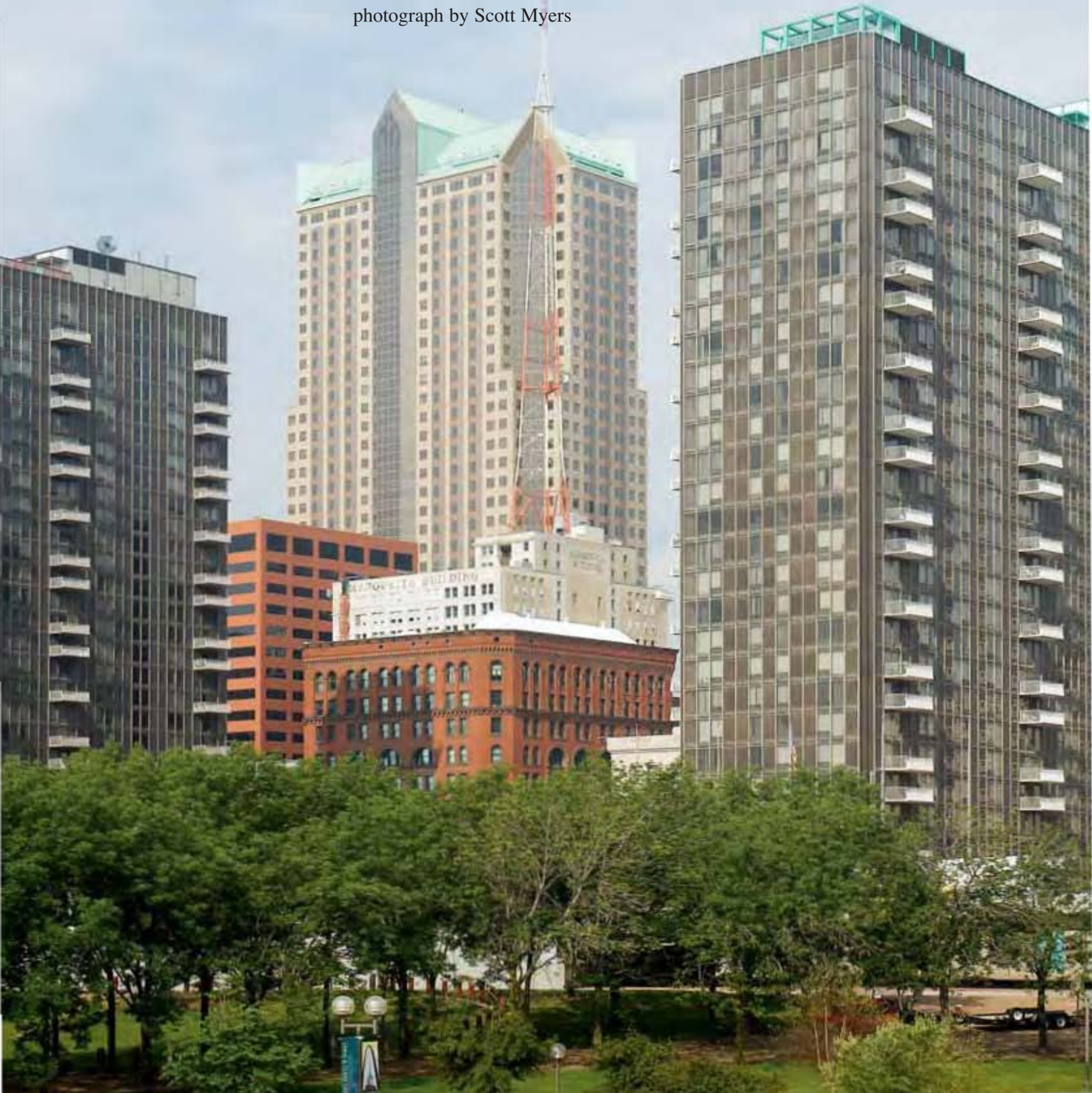
Cover photo by Scott Myers.

Missouri Ready to

New Madrid Fault a National Priority

by Division of Geology and Land Survey staff

photograph by Scott Myers



Rock?

Natural disasters have recently captured worldwide attention as many people around the world have been severely impacted by tsunamis, earthquakes, hurricanes, wildfires and tornadoes. Missouri is not immune to the severe risk and damage that natural disasters present. We face many challenges associated with a potential major earthquake in the southeast portion of the state. So significant is the threat that in a February 2006 congressional field hearing held in St. Louis, the Federal Emergency Management Agency (FEMA) designated the earthquake hazard associated with the New Madrid Seismic Zone (NMSZ) as a national priority.

The New Madrid Seismic Zone is a series of large, ancient faults or breaks in the bedrock buried deep beneath thick sediments in southeast Missouri. In the broad lowlands of the Mississippi River valley known as the Mississippi Embayment, the fault zone crosses portions of five states. It crosses the Mississippi River in three places and spans 120 miles southward from Charleston, Mo. to Marked Tree, Ark. This is the site of the largest earthquake event in the history of the continental United States.

The NMSZ was named for a series of three quakes, followed by thousands of aftershocks, near New Madrid, Mo. in 1811 and 1812. The largest of the three is estimated to have been between 7.2 and 8.0 in *magnitude*. Historical accounts indicate that the effects of these quakes were observed as far away as Boston, Mass., more than 1,000 miles from the epicenter. Damage, though significant, occurred to a largely unpopulated region of the nation. The probability of a 6.0 magnitude or larger earthquake occurring in this seismic zone within the next 50 years is believed to be between 25 and 50 percent.

Today, this size earthquake would be expected to cause widespread damage in a seven- to eight-state area. It is critical that we prepare for the unprecedented problems and challenges such an event would pose for Missouri and surrounding states. Most notably, St. Louis is only 150 miles from the epicenter of the 1811 and 1812 earth-



quakes. It was once thought that the entire St. Louis region would be at high risk from a major earthquake along the NMSZ. An earlier United States Geological Survey (USGS) map was based upon generalized Central United States soil characteristics and thickness data. At the time, these assumed estimates indicated that a 6.0 magnitude earthquake or larger would cause major damage to a significant number of the buildings in the St. Louis region.

We now know that not all of the St. Louis region would be equally impacted by the same degree of shaking. This is due to both improvements in building design and additional understanding of how different geologic materials react to seismic shaking.

It is now recognized that soil conditions and thickness beneath a particular location play an important role in determining the impact from a major earthquake. It is the intensity of shaking or shock wave that causes most of the damage. Thick, fine-grained soils with a high water content have the tendency to amplify or increase the shock wave, while thin, dry, cohesive soils may diminish it. Areas that have soils less than 10 feet thick have little potential for *liquefaction* and *amplification*. Areas that have sandy soils greater than 50 feet in thickness, such as major river floodplains, have the potential for liquefaction. Accurate, localized

EARTHQUAKE MOMENT MAGNITUDE

- 0.1 - 2.0
- 2.1 - 3.0
- 3.1 - 4.0
- 4.1 - 5.2
- 5.3 - 6.0
- 6.1 - 7.9

The New Madrid Seismic Zone crosses five states and falls within the Mississippi Embayment, a low-lying river basin of soft soil materials. Circles represent the epicenters of earthquakes that occurred between 1973 and 2003, with the exception of the largest recorded earthquakes in the area, which are labeled separately.

Glossary:

- **Amplification** — increased shaking in an earthquake caused by thick soils. Some soils characteristics can increase surface waves.
- **Epicenter** — the point on the earth's surface directly over the point where the earthquake begins.
- **Liquefaction** — the process by which water-saturated, solid materials (like sands) are changed by an earthquake to a liquid state as the soil is put into suspension. This material usually flows upward through cracks to form sand blows.
- **Magnitude** — the unit of measurement for the amount of energy released during an earthquake.

There are several scales (e.g., Richter), however the predominant reference is simply "magnitude." Higher magnitude numbers mean an earthquake has more intense shaking and will cause more damage than a low magnitude earthquake.

For more information, see [www.dnr.mo.gov/geology/geosrv/geores/richt_mercali_relation.htm].

- **Surficial Material** — All unconsolidated soil or deposits above hard bedrock.

data is critical to assess how an area will be impacted during a large earthquake.

A modern example as to how geologic materials influence the severity of a seismic event is the 1985 Mexico City earthquake, where damage was largely restricted to areas that had thick, water-saturated, lake bed sediments. More than 3,000 structures collapsed and 5,000 people lost their lives in Mexico City, which was 220 miles from the quake's epicenter. At the same time, residents of Acapulco, Mexico, only 100 miles from the epicenter, felt little shaking and minimal damage. The geology of Acapulco consists of thin, stiff soils and competent bedrock, which does not amplify ground

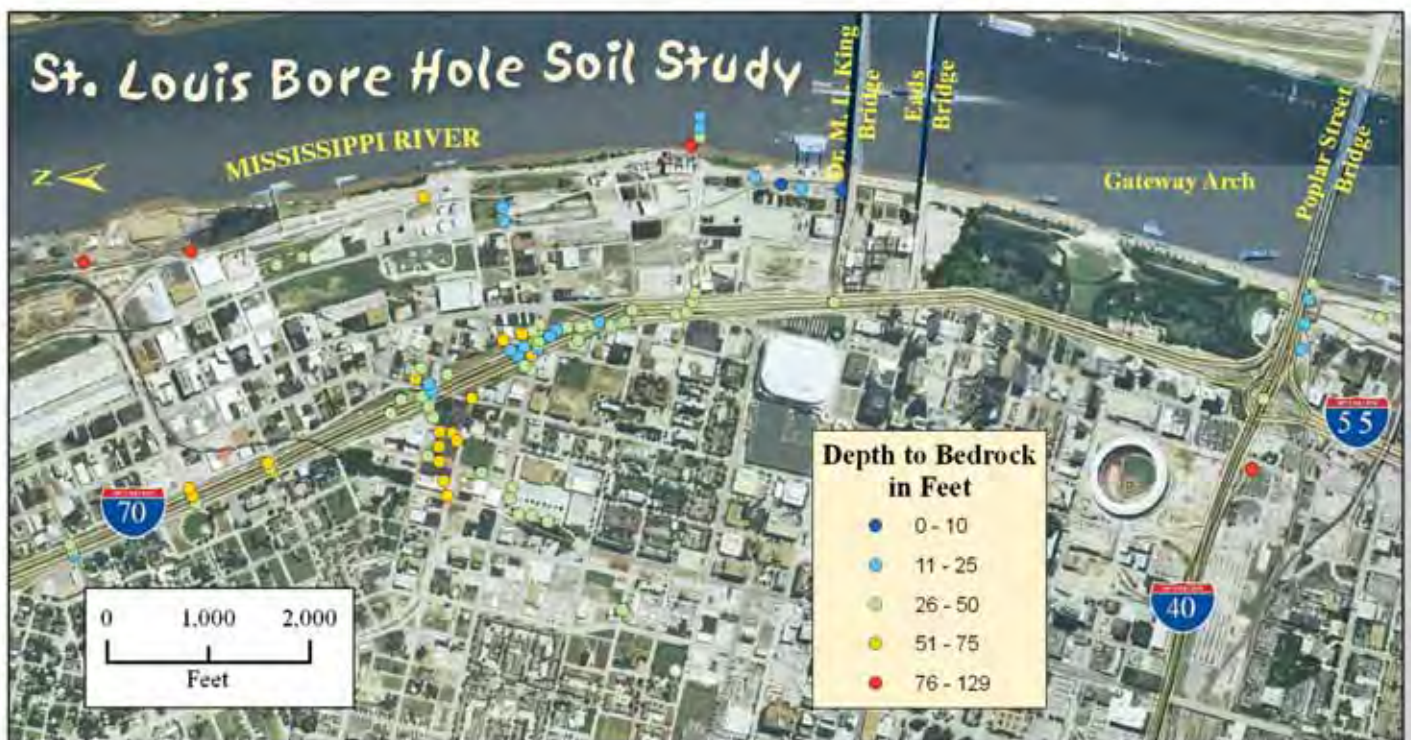
motion or liquefy during strong shaking. The variety of soil materials in Mexico proved that proximity to the epicenter is not the only important variable when considering earthquake hazards. What geologists learned was that soil materials play a major role in predicting risk and ultimate damage to a given area.

Currently, the Missouri Department of Natural Resources' Division of Geology and Land Survey (DGLS) is working with the USGS and other partners to produce new, detailed earthquake hazard maps for the St. Louis metropolitan area. Earthquake hazard mapping involves defining a soil's physical properties, thickness and distribution, as well as interpreting susceptibility to increased shaking during an earthquake. These maps will more accurately define both high-impact and low-impact areas.

The division has completed the first phase of the St. Louis-area study by producing a *surficial materials* database, under a grant from the National Earthquake Hazards Reduction Program. The surficial materials database will serve as the foundational data for producing earthquake hazard maps.

As a great deal of geotechnical information already resides in various agencies and consulting companies within the St. Louis area, DGLS has worked to collect this existing information, place it in a standard format, and make the resulting database pub-

Bore holes drilled throughout the St. Louis area provide a much more accurate picture of the soil thickness and character. This map shows only a small portion of the region and borings available. More than 4,000 boring records are in the database.



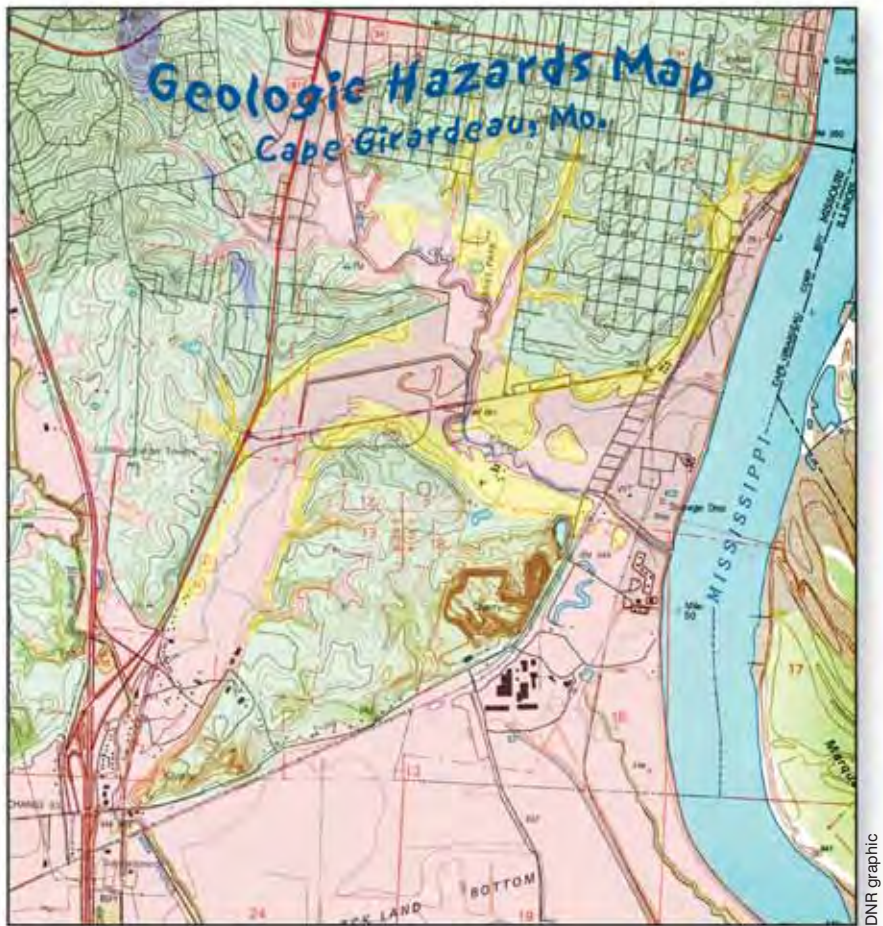
licly available. In addition to the department, agencies contributing data include the Missouri Department of Transportation, St. Louis Metropolitan Sewer District, U.S. Army Corps of Engineers-St. Louis District and the Bi-State Development Agency. Many private engineering firms have also contributed valuable information to the project. The next step in this project is creating earthquake hazard maps for the St. Louis region based upon this master database.

The value of the geologic information gathered for the St. Louis Area Surficial Materials Database is considerable. Modern disaster planning and emergency response uses geologic information to help predict the impact natural hazards may have on the human environment. For example, FEMA has developed the Hazards U.S.-Multi-Hazards (HAZUS-MH) software. This is a geographic information-based modeling program, which has inventories of critical facilities such as hospitals, fire and police departments, other emergency operation facilities and residential areas. Transportation systems, communications and utilities also are included.

Once this geologic hazard database and resulting map products have been added to the Missouri portions of the HAZUS-MH program, the software will be able to more specifically predict local damage. Many critical decisions will be based upon this information. The earthquake risk for each type of facility, transportation route or communication system is predicted by the model and is of critical importance to our ability to plan for and recover from a major seismic event.

The database will also serve as an additional reference for St. Louis County's implementation of new building codes. In September 2005, St. Louis County adopted the 2003 International Building Code. It incorporates design for earthquake hazards that are based upon site-specific soil conditions and their potential to amplify or liquefy during a major earthquake. These codes, as adopted by municipalities, do not guarantee an earthquake-proof structure, but the codes do provide for a level of safety so that occupants may escape from damaged buildings when an earthquake occurs.

The Division of Geology and Land Survey continues to work on the next phase of the project which is to produce geologic hazard maps for the St. Louis region. The maps will identify liquefaction potential,



landslide susceptibility and the extent of potential ground shaking.

While not designed to be site-specific, these maps will serve as guidance for use in new construction and post-quake emergency response planning. They also show areas suitable for staging areas for recovery efforts, and identify communities less likely to experience severe impacts. The graphic above shows the level of detail of the maps.

The surficial material database and accompanying documentation is now available to the public on CD-ROM. It is expected to be used by the USGS, FEMA, the State Emergency Management Agency (SEMA), Association of Central United States Earthquake Consortium, state geologists, universities, private consultants, municipalities and others to produce other earthquake hazard and mitigation products for the St. Louis region. Additional geologic hazard map products for the St. Louis region will be made available as they are completed. To learn more about the project, visit [www.dnr.mo.gov/geology].

The next phase of the mapping project is to use the data gathered for the St. Louis Area Surficial Materials Database to create new earthquake hazard maps for the region like the one shown above for Cape Girardeau. These detailed maps will be used in conjunction with the HAZUS-MH program to estimate local earthquake damage. New studies have shown that the effects of a 6.0 magnitude earthquake on St. Louis would have varying impacts across the area.

This story was a collaborative effort of staff from the Division of Geology and Land Survey.



Long-term planning for growth in a small Missouri community such as Marshfield gets complex when its wastewater treatment discharge sits on the headwaters of four different watersheds – the James, Niangua, Gasconade, and Pomme de Terre River basins.

Marshfield, located at the intersection of Highway 38 and I-44, is the center of commerce and government for Webster County. With a current population near 6,000, the city has been experiencing rapid growth. Springfield sits a mere 17 miles to the west.

City leaders set out to plan for projected commercial and residential growth while protecting these sensitive watersheds. Questions arose, such as: “Is it safe to discharge into the Niangua and Pomme de Terre rivers that are home to the endangered Niangua Darter?”; “Would discharging into the James River require more expensive water treatment?”; and “What type of treatment system will be required to meet federal water quality standards 10 years from now?”

Conceived by Marshfield Wastewater Superintendent John Cooper and coordinated by Rita Mueller, USDA Natural Resource Conservation Service and the Southwest Missouri Resource Conservation and Development (RC&D) Council, a Watershed Technical Committee was formed in April

Marshfield A City in Control

by Philip J. Tremblay

photographs by Scott Myers

2005. Its members include Missouri Department of Natural Resources (MoDNR) Community Assistance Office Director Marsha Boone, Chris Vitello of the Missouri Department of Conservation (MDC), Dr. Robert Reed, who worked with the city as an engineer with MECO Engineering before he joined the faculty of the College of Engineering at the University of Missouri, and representatives of several other agencies.

The technical committee operates concurrently with a Watershed Citizens Committee to review Marshfield's current sewage treatment capacity and projected needs. The combination is reviewing options for the expansion of sewage treatment facilities and has developed recommendations for an appropriate expansion plan. Their findings will help the Marshfield City Council in their decision-making.

"People here are generally supportive of decisions by the city council," said Cooper. "I've been here a long time and have learned to work with state and federal agencies. They are not our enemies. They can help us reach our goals."

The Missouri Department of Natural Resources' Boone said that Marshfield's planning process serves as a good example for small Missouri communities that are "on the fringe," – small, but planning for growth. "Marshfield's process is extraordinary because the city recognizes its delicate balance – sitting at the headwaters of four watersheds. Do they add to problems on the James River or use two other watersheds that are home to the endangered Niangua darter?"

In 2002, Marshfield had teamed with the Southwest Missouri RC&D, the Southwest Missouri Council of Governments and technical consultants to apply for a grant to perform a Stream Water Quality Assessment in the area. The grant was not approved, so the city still needs to document pollutants that are entering local streams from all area sources. City leaders are hoping to enlist the skills of MoDNR staff at the department's Environmental Services Program laboratory to perform storm water runoff monitoring. It is expected that this important information can then be used to upgrade city ordinances and help design infrastructure improvements that will reduce future impacts on stream quality.

The city was recently honored at the Missouri Water and Wastewater Conference for excellence in utility management and planning, according to City Administrator

Dan McMillan. In 2000, the city's sewage treatment plant was upgraded. This included the installation of a computer system that monitors the treatment plant, sewage lift stations, water wells, water towers and the water pumping station. The system alerts city staff if there are conditions developing that could lead to equipment failure.

Two 24-inch pipe casings were laid beneath I-44 to provide sewer and water services to developments on the north side of the highway. Additional connections are planned for potential future annexations.

In 2004, Marshfield replaced smaller sewer water pipes with eight-inch and larger diameter pipes, including a 16-inch diameter "backbone" to maintain water flow and pressure as the city expands. An inventory of the water distribution system has been modeled so future adjustments in water pipe service can match the area's growth demands.

Marshfield's Board of Aldermen is reviewing city ordinances to see where they might improve the management of storm water runoff, establish permitting standards for subdivision development and meet the environmental-related requirements of nearby cities that share the various watersheds.

Marshfield is also developing a computerized program to track operations and budget planning to make sure that all work activities are accomplished and staff is adequate to meet demands set by future growth and development.

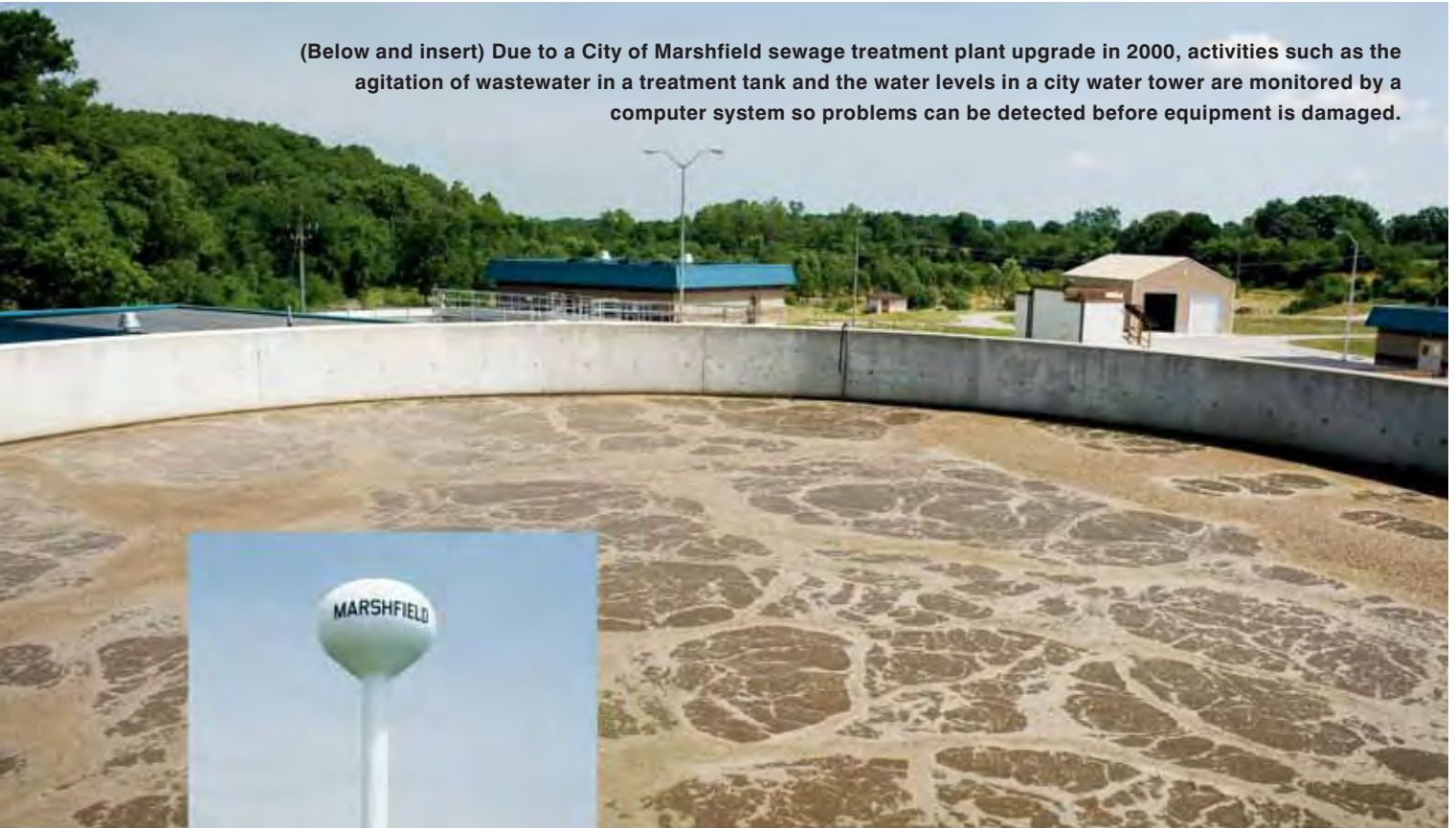
In late 2005, the Watershed Citizens Committee presented recom-

(Opposite page) The Pomme de Terre River, pictured here between Marshfield and Pomme de Terre Lake, may play a future role in the city's wastewater treatment strategy.

(Below) During primary treatment, a skimmer moves across the surface of a sedimentation tank at the Marshfield wastewater treatment plant.



(Below and insert) Due to a City of Marshfield sewage treatment plant upgrade in 2000, activities such as the agitation of wastewater in a treatment tank and the water levels in a city water tower are monitored by a computer system so problems can be detected before equipment is damaged.



mendations to the Board of Aldermen. The committee's mission is to obtain additional sewage treatment for the City of Marshfield.

They reviewed the options available and based their recommendations on the most appropriate expansion

plan for the city's needs. The following recommendations were made:

1. Expand the capacity of the existing treatment facility as soon as possible. The current plant has a permitted capacity of 1 million gallons per day. Current inflow is about 85 percent of capacity. It was suggested that an investment of around \$100,000 in larger influent pumps, an updated disinfecting system and storm water pipes could increase daily capacity to 1.3 million gallons.

This could include establishing local ordinances that limit disposal of materials containing phosphorous. Phosphorous depletes oxygen in water so aquatic life is stressed. The existing wastewater treatment plant is on the west fork of the Niangua River. The committee suggests plac-

ing a new plant on the Pomme de Terre River due to favorable costs and because the James River also serves as the drinking water supply for neighboring Springfield.

2. With assistance from state and federal agencies, the city would need a complete stream study of the Pomme de Terre – including flow data, preservation of endangered species and other potential impacts.
3. To be prepared for a positive result on the Pomme de Terre stream study, the city should start immediate plans to select a site (a land donation for the site was recently withdrawn), build a new plant on that stream, determine methods of sewage treatment, maximum capacity, potential demand for treatment services and required financing.
4. A minimum of 15 acres should be purchased for the plant site, once the stream and site studies are complete. The plant should be isolated from residential development with a buffer zone that could be utilized as a city park, storage for city supplies, a fire station, animal shelter or compost facility.
5. The city should review its options for financing the river studies as well as

the old plant expansion and new construction costs. Possible sources of funding would be extending existing bonds, new grants, state or federal funding, connection fees, partnerships, consumer rates and other options.

6. Marshfield should explore potential areas of development beyond its boundaries and encourage annexation to help control water pollution.
7. It was suggested that both the citizen and technical committees continue to meet on a regular basis. Committee

“And rarely do they ask for assistance from state and federal agencies. It is more typical for a community to collect a series of ‘notices of violation’ because they’ve waited until the 18th year of a treatment plant’s 20-year life, and have not saved any money to upgrade,” Boone said. “By then they are in a financial bind, with an aging system and new regulations to meet.

As planning fails to progress, money goes to potholes or other things. Soon the community population ages and there are no young families to support improvements.”



membership may need to expand as the project grows.

8. Public relations, especially with landowners downstream of the proposed plant, should be a priority during planning.
9. The city should address storm water runoff control because it will eventually impact stream flow quality, water temperature and water quality on all streams in the area.

Boone points out that Marshfield is not a typical small community. “Rarely do they (most cities) plan ahead 10 years for their wastewater treatment needs and community growth,” she said.

Whether it is a lack of planning, delayed planning or simply a case of population growth quickly outstripping a community’s sewage infrastructure, long-range planning is the critical element that can make or break projects like Marshfield’s.

The Marshfield project will be a long journey, but steady hands are at the helm – many steady hands. 🌅

Philip J. Tremblay is a public information coordinator for the department, and assistant editor of Missouri Resources.

(Above left) Marshfield Wastewater Superintendent John Cooper stands near one of the treatment plant’s tanks with the pumping station in the background. (Above) The aeration tanks mix air into the raw sewage to help suspend organic solids, encourage decay and speed the release of dissolved gases.

New Ombudsman Program

Making the Right Connections

by Kerry Cordray

photographs by Scott Myers



Southwest region ombudsman Dave Woolery, left, discusses airport waste disposal issues with Mark Parent, Taney County Airport manager.

On its first impression to many, “ombudsman” may merely be a funny-sounding word of Old Norse origin.

But it is good first impressions, and mending of any past negative impressions, that are the first order of business for those who wear the title of ombudsman for one of the Missouri Department of Natural Resources’ newest and most “outgoing” programs.

Since its beginning in August 2005, the seven men and women of the new Ombudsman Program have served in six regions (see map page 13). Ombudsmen generally work within the department’s regional offices, but operate independently of the office. They inform the regional directors and the department director of issues, concerns and problems that citizens and communities bring to their attention. This allows regional directors to focus more time on professional, technical and leadership responsibilities.

“I’ve been able to center my work more on developing teamwork among our field staff,” said Mike Struckhoff, director of the St. Louis Regional Office. “With an ombudsman as an independent part of that team, we’ve opened some helpful new lines of communication with citizens, facilities



and local governments.” St. Louis’s regional ombudsman Mike Alesandrini believes citizens and facilities appreciate an “open style” of visiting on their issues. “They see this new function as a safe way to have a productive conversation with the regulatory community,” said Alesandrini. “More important, the communication dynamic leads them to focus on compliance issues and reach commonsense solutions to their regulatory challenges.”

The presence of an ombudsman in each region provides a special ear for hearing citizen concerns. “People respond well to having a local department contact who they know doesn’t also perform inspections and investigations,” said Scott Totten, director of the program. “The regional ombudsman operates as an advocate for citizens’ interests, and a resource to help connect communities and businesses with the many kinds of assistance available throughout the department.”

From its start, Department Director Doyle Childers envisioned the ombudsman program as an active and independent wing of the agency, developing informal and supportive relationships with those trying to make sense of the array of environmental regulations. “When the word ‘ombudsman’

is heard, many people have a mental picture of a pen-pushing bureaucrat stationed by a telephone waiting for complaints,” said Childers. “Instead, our ombudsmen are actively engaging with citizens and communities in their regions, looking at local issues before they become problems for the department to solve at the enforcement stage.”

Lively Listening

This hands-on approach has been especially evident “on the road.” Since the start-up of the program, the new ombudsmen have been crisscrossing their regions visiting city and county officials to introduce themselves and the services of the department. “For some communities and facilities, the only direct past experience with the department may have come when there was something wrong,” said Totten. In the first ten months since the launch of the program, the ombudsmen have reported more than 1,250 constituent contacts.

These contacts usually open new lines of communication and help communities understand better where to call for advice about various issues. “Guiding citizens to the right people in the agency to answer

Carrie Smith, right, southwest region ombudsman, visits with Christian County Clerk Kay Brown.



(Above) St. Louis region ombudsman Mike Alesandrini, left, speaks with Matt Robinson, president of Environmental Operations Inc., consultants involved with the redevelopment of a former federal facilities site in St. Louis County.

(Inset) Jackson Bostic, right, southeast region ombudsman, discusses a sewer bond issue with Dexter City Administrator Mark Stidham, left, and Daryl Orr, Dexter city engineer.

their questions is a lot like constituent work,” said Jim Froelker, a former state representative for the 111th District, now the department’s ombudsman for central Missouri. Northeast regional ombudsman Don Summers agreed. “Many citizens just don’t know who or what part of the agency can deal with their concern,” said Summers, a former state representative from the 2nd District. “Our job is often just to listen with care and help point them in the right direction.”

At other times, a local contact can bring immediate help. Judy Bowman, ombudsman for the Kansas City region, stopped by the Archie city hall in March to introduce herself to the city manager. Archie City Administrator Lyle Baker shared concerns about finding enough funding to make required upgrades to the town’s drinking water treatment plant. After Bowman passed information about the city’s problems to the Kansas City Regional Office, water specialist David Williams made time to review the city’s treatment plant and made recommendations to improve filtration processes there. He also helped the city locate a Missouri-based chemical provider that saved the city hundreds of dollars on water treat-

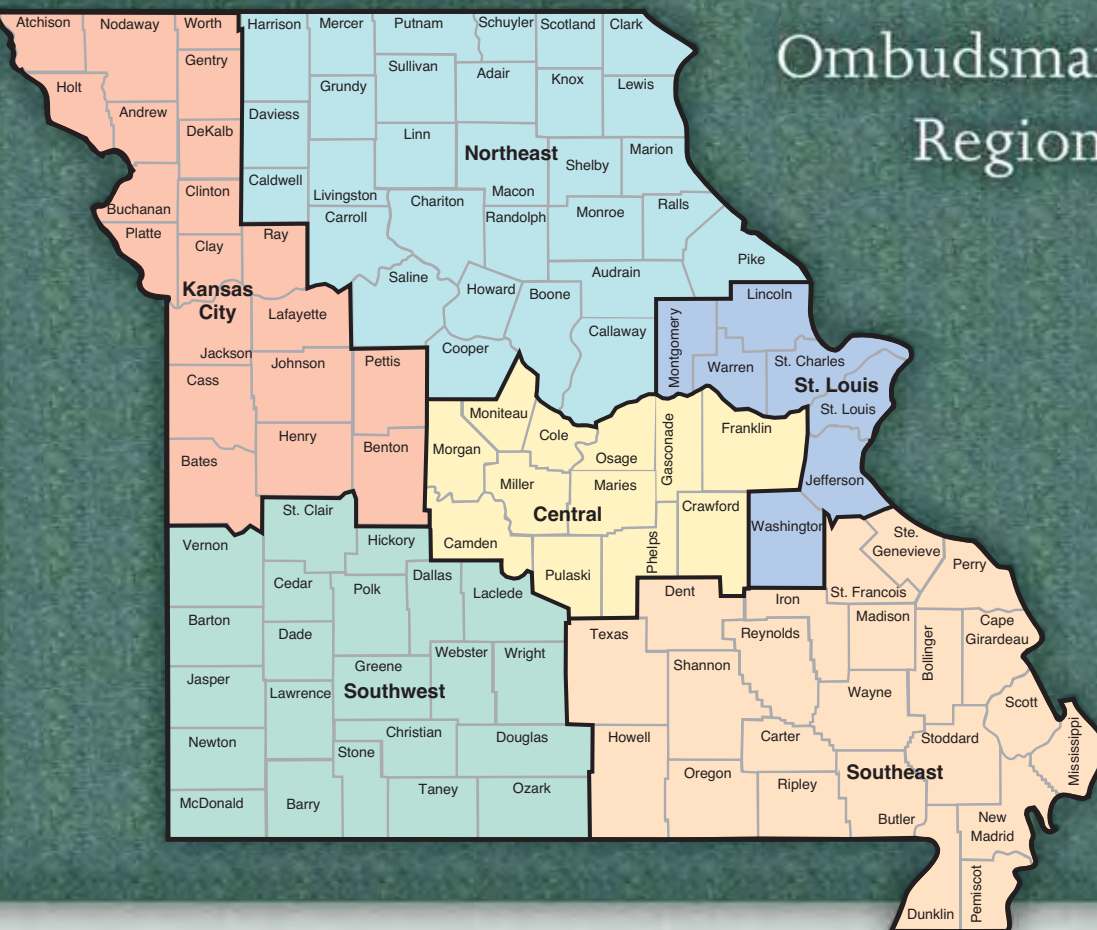
ment chemicals and their shipping costs. “We’ve still got long-term funding challenges to address, but our city was helped hugely as a result of the department’s teamwork on our behalf,” said city administrator Baker. “We’ve always appreciated the department’s helpfulness in the past, but as a result of these new connections we now have new supplies and knowledge, and know who we can call for more advice. We got money-saving help right away, and that will also help us solve some of our long-term problems.”

Coming Together

Visiting with local leaders may also reveal common problems among several communities, calling for area-wide solutions. In his visits with city and county leaders in the southwest region, ombudsman Dave Woolery heard repeatedly from Taney and Stone County communities about concerns with land application of sludge.

A byproduct of sewage treatment, sludge is usually applied to farm fields as fertilizer. Rapid development in the Tri-Lakes area, a growing shortage of land suitable for sludge application, and concerns about growing

Ombudsman Regions



impacts to water quality on the area's lakes has area sewer districts looking for other ways to deal with the stuff. "It was evident some towns needed to get together to talk, to see if we could work on the problem together," said Woolery. He organized the first several meetings of a group to explore the possibility of establishing a jointly-owned biosolids plant to convert sludge into a usable compost-like material. Sewer districts from Branson, Hollister, Forsyth, Rockaway Beach, Kimberling City, Branson West, and the Taney and Stone county sewer boards have joined in the talks, as well as Green Forest and Berryville, Ark.

"We're really encouraged about the possibility of getting some federal funding down the road for a biosolids plant that could be part of a solution for the entire region," said Woolery. Hollister City Administrator Rick Ziegenfuss credits Woolery with seeing the opportunity for regional teamwork. "On a regional issue like this, it's important to have some leadership from someone not influenced by local politics," said Ziegenfuss. "The ombudsman can cut across those local political lines and bring a bigger picture and new dimension to the discussion."

Improving Service

Still another benefit of having ombudsmen working in the field is getting immediate feedback to regional staff on how their compliance assistance efforts are working. The southeast region's ombudsman, Jackson Bostic, worked as an environmental emergency responder for the region for ten years before accepting the newly created ombudsman position.

"My new role helps me immediately encourage regional staff when I hear positive feedback about their work," said Bostic. "Representing the public to staff in this way helps develop even more confidence and skill among our already talented field staff," he added.

For more information on the Ombudsman Program or to find contact information for your regional ombudsman (see list at right on this page), please visit the department's Web page at: [www.dnr.mo.gov/pubs/pub2179.pdf], or call your nearest department regional office or the department toll free at 1-800-361-4827. ☀

Kerry Cordray is division information officer for the department's Field Services Division.

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Green Building Takes the LEED®

Lt. Gov. Peter Kinder recently announced that the Lewis and Clark State Office Building, home to the Missouri Department of Natural Resources, has been awarded the highest rating available by the U.S. Green Building Council for energy efficiency and environmental awareness. Kinder said that the building had been awarded a Leadership in Energy and Environmental Design (LEED®) Platinum certification – only one of 16 in the nation and the first ever to be awarded to a state government office building.



DNR photo by Scott Myers

From left, BNIM partner Steve McDowell, Lt. Gov. Peter Kinder, MoDNR Director Doyle Childers, Rep. Mark Bruns and PCE President Alan Vinson pose with LEED® Platinum plaque awarded to the Lewis and Clark State Office Building.

Kinder commended the department on its focus on energy efficiency, which will save the state an estimated \$30,000 to \$60,000 annually in heating, cooling and lighting costs.

“This building was not designed and built to win awards; it was designed and built to serve the people of Missouri,” he said. “In other words, it’s not a show pony; it’s a workhorse – an incredibly efficient workhorse.”

Department of Natural Resources Director Doyle Childers noted that from its inception, the goal was for the building to “embody the department’s mission.”

“As the stewards of the state’s air, land and water resources, it’s only fitting that this building embodies the values of the people who work here,” Childers said. “From site selection through construction to operation, this facility was built to be environmentally friendly and energy efficient.”

The Lewis and Clark State Office Building was designed by the Kansas City firm Berkebile, Nelson, Immenschuh and McDowell (BNIM). The general contractor was Professional Contractors and Engineers of Columbia (PCE).

For more information on the Lewis and Clark State Office Building, see the department Web site at [www.dnr.mo.gov/greenbldg/] or the BNIM Web site at [www.bnim.com].

Mueller Named Water Resources Center Director

The Missouri Department of Natural Resources has appointed Ryan Mueller as director of its Water Resources Center. Mueller assumed his duties Sept. 1.

Mueller attended Hannibal High School and the University of Missouri-Rolla where he received bachelor’s and master’s degrees in geological engineering. Ryan is completing a doctorate in civil and environmental engineering at the University of Missouri-Columbia.

Prior to his studies at UMC, Mueller was employed as the environmental manager for Continental Cement Company in Hannibal. He was later

employed as an engineering consultant by Schreiber, Yonley and Associates in Fenton and by Resource Institute in Jefferson City. He is a member of the Missouri Society of Professional Engineers and the Mid-Missouri Chapter of Trout Unlimited. He resides in Columbia with his wife, Heather Eastman Mueller.

“We’re excited about the vision and leadership Ryan will bring to this important office,” said MoDNR Director Doyle Childers. “Ryan’s work history, in particular, will be a great asset to the regulated community.”

The center provides technical advice and assistance on water use, compre-

hensive water supply and use planning, and groundwater and surface water monitoring. The center also provides leadership on drought efforts in Missouri, leads negotiations and defends the state’s interest in all interstate water issues. The Water Resources Center also approves applications for regulated dams in the state and performs inspections of those dams.



DNR and EPA vs. SSOs

The Missouri Department of Natural Resources and the U.S. Environmental Protection Agency (EPA) are working together to



help communities address sanitary sewer overflows (SSOs).

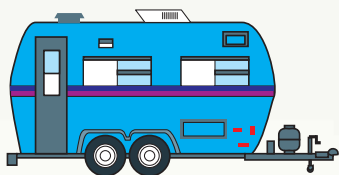
Sanitary sewer overflows occur for several reasons. As sewer systems age, they develop openings where excessive rainfall or snowmelt can enter and cause the water and sewage to exceed the sewer's capacity. Overflows also occur when a community has an undersized sewer system, which means the sewers and pumps are too small to carry sewage from newly developed subdivisions or commercial areas.

It is important that communities eliminate or at least reduce SSOs to protect human health and the environment. Backups into basements carry disease-causing bacteria and viruses into homes, threatening health and causing property damage. SSOs also contaminate lakes and streams, causing serious water quality problems.

The department is working alongside EPA to develop a strategy to help communities address SSOs. The strategy includes discussions with each community to develop a plan and timeline for correcting the deficiencies, while taking into consideration the financial challenges the community may face.

Currently, five communities are participating in this effort. Over the next year, the department will identify additional communities with historic SSO problems and work with them in a partnership.

For more information on sanitary sewer overflows or other water quality issues, contact the department's Water Protection Program at (573) 751-1300.



Missouri State Parks Camper Awards Program Announced

Whether a longtime camper or someone new to Missouri state parks and historic sites, the Missouri Camper Award Program is a great way to experience the 40 campgrounds in Missouri's state park system.

environmental notes

What You Know Can Help Protect the Environment

When you feel frustrated over the condition of the environment and you want to do something about it, call or log on to an Arizona-based Web site called, Earth's 911. The service uses public and private sector partnerships that gather information on a wide variety of environmental services across the nation.

With a call to 1-800-CLEANUP or a computer link to [www.earth911.org/master.asp], your local zip code is the key to find environmental issue resources in and around your community. The service offers advice on finding recycling centers, green shopping, conserving energy, household hazardous waste disposal, composting or teaching and entertaining children using an environmental theme. Future features such as real-time air pollution information, renewable energy data and volunteer lists are proposed.



Another source of environmental information about your community can be found on the U.S. Environmental Protection Agency Web pages, at [www.epa.gov/epahome/commsearch.htm].

Additionally, the Missouri Department of Natural Resources has recently updated its At Your Service brochure, a listing of department and program phone numbers where the public can find assistance on countless subjects ranging from abandoned mines to yard waste, as well as contacts for other related environmental topics.

At Your Service also tells how to contact the department's 18 regional and satellite offices across the state and central offices in Jefferson City. A new feature is contact information for the ombudsmen that serve as liaisons between the department and Missouri's businesses, local governments and citizens.

Hard copies of At Your Service are available at the regional offices, at department public meetings or you can download a copy online at [www.dnr.mo.gov/pubs/pub99.pdf].

Introducing the publication, Department Director Doyle Childers said, "By working together, we can protect the quality of our natural resources while also supporting our state's economy. It takes the full participation of Missouri's businesses, local governments, schools and citizens to make this happen. The first step is to educate yourself on this effort."

If you still have questions, contact the department toll free at 1-800-361-4827.

The program provides recognition to campers who make it their goal to stay in at least five Missouri state park campgrounds a year. Special awards are given to honor five-year, 10-year, 15-year, 20-year and 25-year program participants. Sponsored by the Missouri Department of Natural Resources'

Division of State Parks, the Camper Award Program rewards anyone, whether an individual, family member or member of an organized group, who camps in five different state park campgrounds over a calendar year and does not violate any park rules and regulations. Campers meeting these require-

ments are awarded a certificate and patch. In order to confirm their stay in five different campgrounds, participants in the program must have camper verification cards.

The cards are available at all state parks and historic sites and must be verified by staff at each place where participants camp. Many use the program as a challenge to visit all of Missouri's state park campgrounds.

So, whether you're an old hand at camping in Missouri's state parks or someone just starting to explore the system's many and diverse campgrounds, consider participating in the Missouri Camper Award Program.

For more information about this or other state park programs, contact the Missouri Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf) or visit the Web at [www.mostateparks.com].

Department Recognized for Flexible Permits



The Missouri Department of Natural Resources recently received a Performance Track Appreciation Award from the

U.S. Environmental Protection Agency

(EPA) for its innovative approach to flexible air permitting techniques.

The department was able to accommodate business manufacturing flexibility needs while ensuring environmental protection and encouraging pollution prevention efforts are maintained.

The department's Air Pollution Control Program helped the 3M Company facility in Nevada obtain a new flexible air permit. The permit is designed to enable 3M to make rapid operational changes in response to shifting market demands in the graphics industry. The permit also allows 3M to make changes without reopening the permit for modifications, while ensuring that 3M meets all of its applicable regulatory requirements.

According to EPA, the Department of Natural Resources was particularly helpful, responsive, creative and willing to explore innovative permitting approaches as part of this pilot project. 3M aims to use the permit to continuously improve the facility's operational efficiency and to facilitate additional activity as part of the company's Pollution Prevention Pays program.

The Nevada 3M facility is one of three Performance Track members in Missouri. Performance Track is a voluntary program designed to recognize facilities that consistently meet their legal requirements and have imple-

mented high-quality environmental management systems. Member facilities are encouraged to continuously improve their environmental performance while involving the public.

Performance Track debuted five years ago and has about 400 members nationally, ranging in diversity from manufacturers, colleges, municipal operations, utilities, medical, transportation and retail facilities.

The Department of Natural Resources' Missouri Environmental Management Partnership (MEMP) is a similar program designed to raise environmental performance beyond compliance through the voluntary application of environmental management systems.

Information about the department's MEMP program is available on MoDNR's Web site at [www.dnr.mo.gov/env/memp/index.html]. EPA's Performance Track program is available on the Web at [www.epa.gov/performance-track/].

New Watershed Group Sets Agenda for Lake of the Ozarks

The area's first watershed watchdog group, the Lake of the Ozarks Watershed Alliance (LOWA), has recently organized, with assistance from the Missouri Department of Natural Resources and several state and federal agencies.

I was reading in your Spring/Summer 2006, Vol. 23, No. 2, an article about the Missouri state park system, by Sue Holst (Missouri's Parks-and-Soils Sales Tax). It mentioned two couples from Hazelwood who won an award for camping in Missouri state parks for 25 years.


I'd like to inform you that I, my husband and four children have been camping in Missouri state parks since 1960 (46 years). In that time, I have camped in 11 state parks and have visited 27 state parks and seven historic sites.

Mrs. Audrey McDonnell
Kirkwood

The department is honored by the McDonnell family's long-standing association with Missouri state parks and historic sites. Nearly 50 years of camping in our parks is a feat worth mentioning. The story referenced in Mrs. McDonnell's letter was published in the Spring/Summer 2006 issue, and mentions the department's first 25-year Missouri Camper Award recipients. Information about the Missouri Camper Award program is provided on page 15 of the News Briefs section.

LETTERS



Letters intended for publication should be addressed to "Letters," *Missouri Resources*, P.O. Box 176, Jefferson City, MO 65102-0176 or faxed to (573) 522-6262, attention: "Letters." Please include your name, address and daytime phone number. Space may require us to edit your letter. You also can e-mail *Missouri Resources* staff at moresdnr@dnr.mo.gov 

The agenda of the watershed group is simple: to get a handle on constantly changing water quality issues, to monitor the threat of pollutants, and to develop prevention strategies to ensure the Lake of the Ozarks' future environmental health.

The first step will be working with other organizations to collect data and assess the lake's condition. That will also involve identifying trouble spots, such as coves, where bacteria and other pollutants tend to gather. Leaking septic tanks, storm water runoff containing pesticides, fertilizers and other chemicals used to maintain lawns, and agricultural waste that washes from farmland also will be assessed, according to Donna Swall of LOWA.

LOWA will be looking at information gathered by Missouri Stream Teams and groups such as Lakes of Missouri Volunteers. LOWA also plans on researching other watershed programs in the state. A key issue will be an education and awareness campaign to help people understand what is going on around the lake and along tributaries that flow into it. "Educating the public is important to the overall success of the watershed alliance," Swall said.

Harris Honored by Deputy Drug Czar



Brad Harris, chief of the meth/special projects unit in the Missouri Department of Natural Resources' (MoDNR) Environmental Services Program, was one of nine Missourians honored by the White House Office of National Drug Control Policy (ONDCP). Harris was honored for his program's work in the fight against methamphetamine. ONDCP Deputy Director Scott Burns and U.S. Attorney Catherine L. Hanaway awarded the special recognition in St. Louis. Harris also was recognized for his work by U.S. Senator Jim Talent.

Regarding Mr. Harris, the Department of Justice nomination read: "After receiving numerous complaints from multiple law enforcement

agencies around the state about meth lab clean up, Harris developed a state program that has become a national model. Harris was able to work with the EPA to secure funding to start a program that allowed state and local officers, who had received meth lab training, to safely transport hazardous waste to any one of 20 sites around Missouri. Volunteer local fire and law enforcement officials operate these hazardous waste containers.

"The Department of Natural Resources pays to safely and legally remove and destroy the hazardous waste removed from meth labs. The first container was opened in October 1998 and since that time the 20 containers have received meth lab waste from 9,525 labs across the state. This accounts for 378,491 lbs. of hazardous waste that has been collected to date.

"This was done at a conservative cost savings of \$22 million over conventional waste handling. Harris has worked closely with numerous local and state law enforcement officials to produce a model program for the nation."

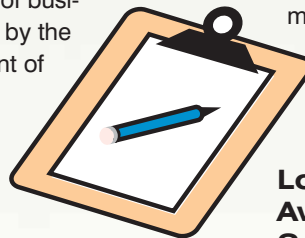
Other award recipients were from the Missouri Highway Patrol, Missouri National Guard and other county and municipal law enforcement officers from around the state.

Survey Shows IAVs Helpful to Missouri Businesses

A recent survey of businesses, conducted by the Missouri Department of Natural Resources, found that nearly 99 percent of respondents felt well served by initial assistance visits (IAV).

Initial assistance visits are designed to help businesses, communities and citizens protect the environment by preventing spills, leaks and other hazards from occurring.

Department staff visited land disturbance sites, newly permitted air sources, drinking water facilities where permit actions are anticipated, limestone quarries and hazardous waste genera-



tors. The staff walked applicants through their unique permit requirements and provided compliance assistance rather than conducting formal inspections.

About 82 percent of the new permit holders completed a survey. They were asked to rate the department's assistance on a scale of one to 10 (10 being best) on how helpful the staff visits were in helping to understand the permit. The department received an overall rating of 9.2. Respondents said they found the visits to be very informative and proactive and that they helped to reinforce good practices already being implemented at the facilities.

"We're pleased Missouri's businesses have found this program helpful," said Doyle Childers, director of the Missouri Department of Natural Resources. "By helping facilities understand their permits, we can head off dangerous and costly environmental mistakes," Childers added.

Because the IAVs are not formal inspections, compliance assistance is provided with the expectation that corrections will be made if the department discovers any problems. However, the department will initiate formal enforcement actions if violations of a very serious nature are found. Very serious violations are those that are immediately or imminently harmful to human health or the environment, such as a hazardous waste release.

For more information on the department's compliance assistance initiative, visit our communications Web site and access [www.dnr.mo.gov/pubs/communications.htm].

Low-interest Loans Awarded to Missouri Schools and Communities

The Missouri Department of Natural Resources has approved nearly \$9.3 million in low-interest loans through the Energy Loan Program for Fiscal Year 2006. Close to 50 schools and communities will use the loans to make energy-efficiency improvements.



TIME EXPOSURES

Send your photo to "Time Exposures," c/o Missouri Resources, P.O. Box 176, Jefferson City, MO 65102-0176. All pictures will be returned via insured mail. Pre-1970 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.



Morgan County Historical Society photo

The Martin Hotel in Versailles is pictured in 1884, just before the log portion of the structure was moved back to make room for a two-story brick building. The Martin family arrived in Versailles from Patrick County, Va. in 1853. They moved the log hotel from the city square to its present location at 1120 N. Monroe in 1854. In 1877, they built a three-story frame building north of the log cabin. The Martin family ran the hotel for more than 120 years.

In 1965, the Morgan County Historical Society purchased the 1877 portion of the hotel, restored it and opened a 12-room museum. In 1974, the historical society purchased the two-story brick building still operating as the Martin Hotel. Today, the museum includes 28 rooms that are furnished and decorated to reflect the hotel rooms of earlier days and as theme rooms to represent Morgan County history.

For more information on the Martin Hotel, contact Morgan County Historical Society President Andrea Woodson at [awoodson@advertisnet.com] or [mocohist@advertisnet.com].

Energy efficiency plays a vital role in environmental quality, reducing environmental impacts on Missouri's air and water by displacing fossil fuel generation. More than 95 percent of Missouri's primary energy sources are imported from outside the state at a cost of more than \$13 billion each year. Energy efficiency benefits Missouri's economy by reducing the rate at which dollars leave the state for the purchase of fossil fuels.

The Missouri Department of Natural Resources' Energy Center has loaned more than \$62 million throughout Missouri since 1988. Eligible loan applicants are schools, local governments, colleges and universities. Loan recipients are currently saving an estimated \$9.7 million in energy costs each year. Following is just a partial list of

schools, colleges, universities and smaller municipalities that received loans in Fiscal Year 2006.

East Central College in Union received a nearly \$655,000 loan for energy-efficiency projects that are expected to cut the college's energy costs by \$67,296 annually.

Kansas City-area schools received more than \$4.7 million in loans for energy-efficiency projects for seven metropolitan area municipalities and school districts.

The Lincoln R-II School District in Benton County received a \$555,000 loan. The projects are expected to cut district energy costs by \$47,669.

St. Louis-area schools received nearly \$1.6 million in loans for energy-efficiency projects for two St. Louis metropolitan area schools and one university.

Jefferson City Public Schools received a \$1.06 million loan for energy improvements to 14 Jefferson City Public School buildings, expected to save the district an estimated \$93,850.

The University of Missouri-Rolla received a \$712,000 loan to improve lighting in 20 campus buildings.

For more information, contact the Missouri Department of Natural Resources' Energy Center at (573)751-3443 or the department toll free at 1-800-361-4827.

For news releases on the Web, visit [www.dnr.mo.gov/newsrel/index.html]. For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at [www.dnr.mo.gov/calendar/search.do].

Terry Whaley Ozark Trail Blazer

Dense woodlands, pristine streams and clear, fish-filled lakes define Missouri's Ozarks. In an urban area like Springfield, the non-profit Ozark Greenways Inc. brings the natural Ozarks heritage to city residents with a system of hiking trails, bike lanes, linear parks and greenways.

Terry Whaley has been executive director of the Ozark Greenways since 1995. Known as "Mr. Meetings" by his fellow trail users and planners, Whaley is an active participant in at least 15 associations, councils, trusts or committees that are dedicated to building a relationship between people and their natural surroundings.

In 1980, Whaley graduated with a degree in recreation and leisure studies from Southwest Missouri State University. He soon went to work as Director of Parks and Recreation for the City of Fenton, in St. Louis County. It was there he met Chris Buckland, grants manager for the Department of Natural Resources' Division of State Parks. Fenton had just won a grant to build a trail.

"I've been told that I'm energetic because I come from back east, but let me tell you, I could not keep up with Terry in actions or in words," Buckland recalls. "Terry is constantly thinking of ideas that change or improve the way people enjoy outdoor recreation so they will have the best experience possible. I call him a visionary because he looks at what is missing now and what could and must be done in the future to improve trails in Missouri."

The Ozarks Greenways has around 1,000 members and volunteers who are responsible for fund raising, acquiring trail easements, designing and developing trails. Whaley has helped create a land trust committee that works to preserve and protect open areas in Green County. The group also manages and promotes the 35-mile-long Frisco Highline Trail, the second longest rail-trail project in Missouri. The trail, in Greene and Polk counties, was designated as a National Recreation Trail in June 2006.

Whaley's enthusiasm and trail-building expertise is well known in other parts of Missouri and the nation. Caryn Giarratano, planning coordinator with the Missouri Department of Transportation, serves with him on the Missouri Bicycle and Pedestrian Advisory Committee.

"Terry Whaley is a personable, hard-working and intelligent person whose passion in life is to create and use trails," said Giarratano. "He has contributed significantly to the creation of Missouri's Trailmap for Nonmotorized Transportation – a state bicycle and pedestrian strategic plan ... when I need his help, he has always been willing to drop everything to help me."

Terry, his wife Jeannene and their daughter live in Springfield. When he isn't working, his activities include canoeing, white water rafting, backpacking, bicycling and snow skiing.

"I don't know how he finds the time to do it all, but he does and the man is never stressed, he is always upbeat and happy," said Buckland. "Anyone who had had the pleasure to meet Terry never forgets him and 95 percent will tell you he is a great individual and a credit to mankind," he said.



Ozark Greenways photo

Whaley

Tom Judge Cleanup Follow-up

Tom Judge, an environmental specialist with the Department of Natural Resources' (MoDNR) Hazardous Waste Program, provided oversight and management on an extensive cleanup in Crawford County. More than 171,000 tons of highly toxic cadmium and lead were removed and disposed of from 20 widely scattered private property sites. The material was dumped there beginning in the late 1960s until the 1990s. It was thought to be "clean fill" at the time.



DNR photo by Scott Myers

Judge

Department attorney Kara Valentine said that Judge's skill working with people encouraged the court-ordered cleanup by Burlington Northern Railroad (BN). The company also agreed to pay a \$900,000 civil penalty to the Crawford County School Fund and \$500,000 to Missouri's Natural Resources Damages Fund. Along with others, Judge's investigations resulted in criminal charges, with BN pleading guilty to violations of federal CERCLA (Superfund) law and the Clean Water Act. As a result of that plea and settlement, BN paid a fine of \$7 million and restitution to the State of Missouri totaling \$3 million.

Judge credits other department staff for a share of this accomplishment. "I don't want to take too much credit here," he said. "We succeed as a team." Judge added that he and other department investigators also received excellent cooperation and assistance from the U.S. Environmental Protection Agency's (EPA) criminal investigation division.

Judge was selected as the State of Missouri Employee of the Month for September 2005. Previously he had been named as the department's Employee of the Month for June 2005. His reaction to these recognitions: "I come from a service-oriented family, with lots of members in medicine, education and government service, so I'm very proud that my agency has chosen to recognize my work to serve the people of Missouri," Judge said. "But everything I was able to do was because I was part of a strong team; people inside and outside this agency working together."

"Tom's diligence created a favorable impression of the Department of Natural Resources with a group of citizens who were initially distrustful and suspicious of state government," said Valentine. "Tom was also able to earn the respect of BN; they quickly perceived him as fair and chose to cooperate with him in his role of overseeing the cleanup, rather than to contest his decisions. He was always diligent and demanding, yet completely professional in dealing with BN to carry out the terms of the court order."

After the consent judgement was filed with the Crawford County Court in 1999, Judge worked for six years to establish good relationships with the many locals who had railcar waste dumped on their property. He maintained contact with the public to keep them informed of his investigations and BN's cleanup progress. His efforts led to the evacuation of one family from their home due to high levels of lead contamination. He also worked with the local health agency to test residents for unhealthy levels of lead.

Judge lives in Jefferson City and has worked for the Department of Natural Resources for more than 20 years.

Van Meter State Park

by Jeff Durbin

photographs by Scott Myers

Van Meter State Park has always packed a powerful one-two-three punch of natural beauty and recreation combined with a long cultural history. These days, the cultural third of the park's attractions gets top billing with the construction of an American Indian cultural center. When complete, it will be home to stories of the tribes that lived in what is now Missouri.

Van Meter State Park is probably under-appreciated because it isn't close to a large city or major highway. Marshall, the seat of central Missouri's Saline County, is 12 miles away. But the lack of nearby urban areas means an uncrowded setting. The park has many of the enjoyable features you expect in a Missouri state park: a shady campground, fishing lake, four miles of trails, interpretive markers, shelter



houses built by the Civilian Conservation Corps and a state-recognized natural area.

The 300-acre Oumessourit (pronounced “Oo-Missouri”) Natural Area is an outstanding example of formerly abundant Missouri River wetlands. A trail leads first into a bottomland forest featuring tall cottonwoods and sycamores, then continues by boardwalk into a marsh. The seasonally wet, nutrient-rich soil and variety of water depths sustain more than 120 types of plants and many animals.

The marsh was created when an old channel of the once-wild and dynamic Missouri River was cut off, formed an oxbow lake, and gradually filled. In addition to the marsh, the natural area contains a three-acre fen (a saturated freshwater seep), and forest on the slopes above. Known as The Pinnacles, these hills are made of fine-grained, windblown material of glacial origin called loess. Several rare or uncommon plants and animals still survive in the natural area, and migrating birds are common in spring and fall.

This land came to the Missouri state park system from the Van Meter family. Abraham and Elizabeth Vanmeter (the original

spelling was one word) resettled the land in 1834. With slave labor, the Vanmeters farmed the land, raised and sold cattle and bred racehorses. The family occupied the land for nearly a century. In 1932, Annie Vanmeter donated 369 acres to the state of Missouri in memory of Abel Vanmeter, her husband. The park now has 983 acres.

*V*an Meter State Park will soon have more to offer once the park’s newly expanded visitor center becomes a cultural center for American Indians in Missouri. The center will contain exhibits about American Indian tribes that lived in present-day Missouri. The exhibit space – representing the inside of a lodge – can also be used for storytelling, dance, music and lectures by and about American Indians of any tribe. An outdoor area is available for gatherings such as powwows and drum competitions.

Centuries of history are the reason for charting this ambitious future. The Missouri Indians, whose name has passed on to our state and major river, lived in a large hilltop village here from about 1450 to the 1720s. The site, studied extensively by University of Missouri archaeologists in the 1960s and

(Opposite page) Van Meter’s wooded campground has both amenities and history. Company 1714 of the Civilian Conservation Corps built two picnic shelters during its time in the park in the mid-1930s.

(Above) Boonville campers Chris Kempf, his daughter Rebecca, niece Stephanie and daughter Kayla enjoy a campground meal.





William Clark, the Missouri village was abandoned. The captains, in fact, identified former Osage and Missouri villages when they made camp on June 15, 1804, during their upriver journey. A trail leading to a Missouri River overlook has historical markers about the Lewis and Clark Expedition and Missouri Indians.

Other remarkable Native American features are scattered around Van Meter. Within park boundaries is evidence of occupation for at least 5,000 years. A large earthwork called the “Old Fort” and the Mound Field are protected here. The Old Fort,

constructed by the Missouri Indians, was possibly used for ceremonies – its exact purpose is not known.

The Mound Field consists of three burial mounds from the Woodland Indian period. A short distance up the Missouri River lay an 18th-century Little Osage village. With all of these connections, and people living here throughout historic and prehistoric times, it’s easy to see why Van Meter State Park was selected for Missouri’s cultural center for American Indians.

Staff members have traveled to Oklahoma and Kansas to consult with representatives of the Otoe-Missouria, Osage, Kanza, Peoria, Delaware, Shawnee, Kickapoo, Ioway, and Sac and Fox tribes. The tribes will help contribute traditional stories, photographs, videos, display objects and artwork to the center.

The American Indian cultural center project is a legacy of the Lewis and Clark Expedition bicentennial commemoration. Because of its location on the expedition’s 1804-06 route, the park is a certified Lewis and Clark National Historic Trail site. A bicentennial goal is to create lasting facilities that give voice to tribes and show their vitality today. Van Meter’s new cultural center will do that.

The center will open in phases starting in fall 2006. For more information about the center or for information about Van Meter State Park, contact the park at (660) 886-7537, the Missouri Department of Natural Resources toll free at 1-800-334-6946 (voice) or 1-800-379-2419 (Telecommunications Device for the Deaf) or visit the Web at [www.mostateparks.com].

Jeff Durbin is a naturalist for the department’s Division of State Parks.

(Above) Exhibits on a boardwalk trail lead visitors through the Oumessourit marsh, which hints at the once-vast wetlands of the Missouri River floodplain. (Inset) The Old Fort atop the park’s “Pinnacles” is an earthworks built by the Missouri Indians. Not an actual fort, it may have been used for ceremonies.

1970s, is a National Historic Landmark. The first historical reference to the Missouri Indians comes from 1673, when French explorers Father Jacques Marquette and Louis Joliet marked the tribe’s location on a map, along with their version of the tribe’s name – “Oumessourit.” Shortly after their expedition, the Missouri River was being called the “River of the Missouris.”

The French built the first European post on the Missouri River, Fort Orleans, opposite the Missouri village in 1723. The Missouris were affected quite early by European contact, and apparently ravaged by disease, especially smallpox.

Eventually the Missouris were so diminished by disease and warfare that they joined their closest relatives, the Oto, in Nebraska. By the time of Meriwether Lewis and

Seeking Energy

New Curriculum Provides Path

by Bryan Hopkins

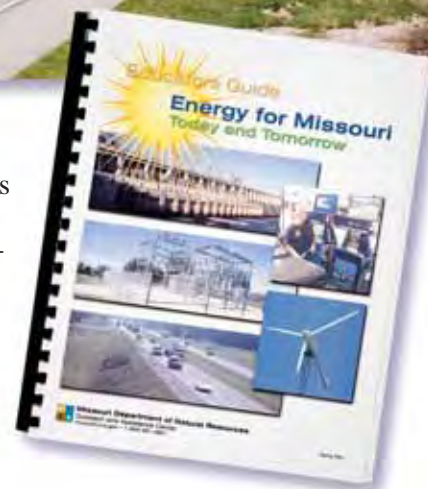
photographs by Scott Myers

Humans began to manipulate energy sources thousands of years ago, learning to control food supplies through agricultural practices and harnessing energy in the form of fire to generate warmth and light. In our modern world, we are dependent on having easy access to complex forms of energy on a daily basis. Energy is used to drive to work, heat and cool our homes, provide light indoors and at night, and power most of our technology-based tools.

Our ability to control energy has changed the very nature of our relationship to the earth. We routinely cover vast distances, live in very cold or hot climates and process vast quantities of raw materials used to produce the myriad products we use in our lives. However, it is often only during the occasional power outage or gas shortage that we realize how important energy is to us. Our continued success as a society depends on our ability to develop energy sources that are plentiful, renewable and environmentally sound.

While fossil fuels can be expected to remain an important component of our energy use, recent developments in energy generating systems show significant promise. So-called "alternative" energy sources such as wind power, solar energy, biofuels and geothermal power now offer approaches to providing energy that are renewable and can reduce our impact on the environment.

The Department of Natural Resources is pleased to offer a curriculum developed in collaboration with a team of Missouri science teachers. The first section of the curriculum provides background information on various energy systems and energy applications and is followed by a series of lesson plans targeting middle school students. Methods for adapting each lesson to other grade levels are also provided. Energy issues are destined to become an even greater factor in all our lives and it is critical that our future citizens be prepared to face these changes in an informed manner.



(Top) Driving is only one way Missourians use energy.

(Center) Bagnell Dam, on the Osage River, generates electricity with water from the Lake of the Ozarks.

(Above) The Mid-Missouri Energy plant at Malta Bend takes energy from corn to produce ethanol.

Energy Path Activities:

Your Energy Path for a Day

Use the activities of a typical day to explore the energy required to achieve these events.

Compare the changes in energy use through the years.

Energy Values

- Evaluate feelings, attitudes and behaviors towards energy use and energy resources.

Energy Conservation Detective

- Explore strategies for reducing energy use in the average American home.
- Conduct a home energy audit.
- Prepare a report recommending ways to help your home conserve both energy and money.

Building an Energy-Smart Home

- Build a simple model home that incorporates energy-saving design strategies.
- Adopt the role of an architect and design and draw a modern home that incorporates some of the concepts learned during class discussions.

The Power of Choice

- Through a role-playing activity, learn about various choices in energy systems designed to provide energy to large communities. After researching the various choices in power production methods, the students will defend a specific approach and learn from other classmates who will advocate a different facility power system.

“Ice” Capades –

The Power of Insulation

- Use various insulation materials to keep an ice cube from melting.
- Explore principles of thermal energy transfer and the application of insulation in minimizing energy loss.

Your Source of Energy

- Explore the role the sun plays in providing much of the earth’s energy.
- Next, locate the commercial energy production facilities and energy transmission and transportation systems nearest the school.

It’s Just a Soda Pop!

- Explore all the ways energy is associated with the production and disposal of a typical soda pop.

Coal Cookies – A Limited Resource

- Mine a cookie for “coal” (chocolate chips) and compare the estimated amount of chocolate chip reserves with the actual amount recovered.
- Explore the limited nature of nonrenewable fuel resources and issues of predicting how long fossil fuel resources will last.

Is it Worth it? – The Energy Side of Recycling

- Explore the monetary value of aluminum beverage cans as a scrap metal and then consider the energy advantages of recycling aluminum.

The curriculum is available for download from the department’s Web site [www.dnr.mo.gov/teachers/energy/curricula.htm] and is also available in printed form or on a compact disc. For more information, call 1-800-361-4827 or (573) 751-6654.

Bryan Hopkins is an environmental education specialist with the department’s Field Services Division.

Reduce, Reuse, Recycle and

Retire

story and photo by Stuart Westmoreland

Bob Hentges was doing environmental protection before the Missouri Department of Natural Resources was, well, the Missouri Department of Natural Resources. Hired by the state's Water Pollution Control Board, Hentges managed construction grants for community sewage treatment facilities. In 1974, state government was reorganized, with the creation of the Department of Natural Resources among the changes.

Hentges first job was as a regional environmental spill director. He managed the federal permit program which helped fund spill cleanups. In 1992, he became director of the Division of Environmental Quality's Jefferson City Regional Office. After 30 years of reducing, reusing and recycling, it was time for some retiring. But while you and I see a golf course, Hentges sees an overuse of pesticides. We see a boat slip, he sees non-biodegradable dock foam.

Enter the River City Habitat for Humanity (HFH) ReStore. If Bob Hentges had more to give, here was a place to give it. Created and managed by Jim Hofmann, the ReStore was started three years ago and helps fund River City HFH home building projects. Hofmann, the 2006 Mel Carnahan Service and Volunteer Award honoree for Missouri, also founded the original HFH home building program in Jefferson City.

When it was time for the HFH ReStore to grow, Hofmann worked hard to secure funding that would allow the growing operation additional floor space and storage. In 2004, a large metal storage building was built at the

ReStore's new address, 1420 Creek Trail Dr.

The ReStore accepts donated building supplies, fixtures, carpet, even some furniture. Most are used, some are surplus, some are new with minor blemishes, some are simply overstocked items. Local retailers, contractors, and apartment owners donate items, as do countless individuals. Your donations are tax-deductible since Habitat for Humanity facilities and operations are not-for-profit. Of the 48 Missouri HFH affiliates, only six have ReStores.

In October, Hentges starts his eighth month as a volunteer. He still remembers the first thing he bought at the ReStore. "It was this nicely made, grape wreath. I waited until they priced it at \$5, then I took it home." His wife, Martha, was impressed with his shopping skills. Hentges also finds used lumber for his woodworking shop.

"The idea is not to make a lot on this stuff, it's to move it," Hentges said. And, except for overhead, every penny goes directly to building Habitat for Humanity homes in Jefferson City. This spring, River City HFH completed its 46th house. Ground-breaking on No. 48 occurred in July.

Rayma Grohs, who helps run the ReStore says the ultimate goal is to build 10 homes every year, which is dependent on several factors. "We



Tom Arnold (left) and Bob Hentges prepare to move some carpet at the River City Habitat for Humanity ReStore in Jefferson City. Arnold has worked at the ReStore for more than four years. In 2000, Hentges retired from the Department of Natural Resources after 30 years of work protecting the environment.

can't get too far ahead of ourselves," Grohs said. "Once you've started construction, you don't want an approved applicant to have to wait years to get into their new house."

From an environmental standpoint, the ReStore's effect on the local waste stream is immense. Every inch of solid waste landfill space costs money – and that space is finite. Those tons of recycled, resold and reused materials save landfill space, as well as the associated costs.

The environmental pluses are not lost on a 30-year Department of Natural Resources employee, but Hentges appreciates the people side more these days. "Working within the rules and regs of state government, you see big-picture progress. Here, you're protecting the environment and helping people – interacting with them," he said.

Hentges and his wife Martha have three children, Charlene, Allen and Luke.

Stuart Westmoreland is a public information administrator and editor of Missouri Resources.



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